

### **REMARKS**

Reconsideration of the above-identified application in view of the following remarks is respectfully requested.

Claims 1-41 are pending in the application. By this amendment, claims 1, 6, 13, 19, 20, and 35 have been amended, and claims 5 and 34 have been canceled.

**Summary of response:** The cited prior art fails to teach use of a plurality of strain gauges arranged around a balloon/catheter at different circumferential configurations, use of comparison of measurements made around the catheter circumference to compare readings from one side and other of a same vessel at a same axial position, and assymetric markers enabling to calculate the position of a lesion based on knowledge of the rotational position of a catheter. Claims have been amended and some rejections traversed based on these considerations.

#### ***Claim Rejections – 35 USC § 102***

The Examiner has rejected claims 1, 3, 5-7, 9 and 11 under 35 U.S.C. 102(b) as being anticipated by Murphy (5,902,308). Claim 1 has been amended.

The Examiner's rejection of claim 5 is respectfully traversed, and the limitations of claim 5 have been braodened and included in amended claim 1, and have been rewritten so as to make more clearly explicit differences between the instant invention and the prior art which were already implicit in original claim 5.

In his rejection of claims 5 and 6 the Examiner states that Murphy teaches the plurality of conductor bands mounted in a circumferential configuration. Original claim 5, now withdrawn, specifies "The catheter of claim 1, wherein a plurality of said strain gauges are mounted in a circumferential configuration around said balloon." The Applicant believe that the language of original claim 5 precludes the Examiner's interpretation thereof: it is the *plurality* of strain gauges which are specified as being mounted in a circumferential configuration, as indeed is shown in Figures 1a, 1b, 2a, and 2b of the instant application.

Claim 1 has been amended to show that different gauges are at different circumfrential positions, for example as shown in detail in Figure 2b and in the discussion thereof. In contrast, Murphy in his Figure 5 element 62 cited by the

examiner, presents (in Figure 5 and even more clearly in Figure 6) conductive strips which *individually* have a circumferential configuration. In Murphy it is the individual strain gauge that has a circumferential configuration, whereas in the instant application and in original claim 5 it is clearly the *plurality* of strain gauges which are arranged around a circumference of the balloon. The difference can be significant: it is the differences in measurements among gauges of the plurality of gauges which is can be used to detect and to localize plaque or other obstructions of the blood vessel, for example, as explained in the instant disclosure with reference to Figure 2b.

Accordingly, the Applicant submits that original claim 5 was patentable. The limitations of original claim 5 have now been braodened and included in amended claim 1, and the language of the claim has been modified to make more clearly explicit those limitations which were already implicitly present in original claim 5, as explained in the previous paragraph. The Applicant believes that amended claim 1 is thereby shown to be patentable.

Claim 5 has been canceled. Claims 3, 6, 7, 9, and 11 depend from amended claim 1, which the Applicant believes he has shown is not anticipated by the prior art.

#### ***Claim Rejections – 35 USC § 103 -- Knowlton***

The Examiner has rejected claims 2, 4, 8, and 10 as being unpatentable over Murphy (5,902,308) and further in view of Knowlton et al (6,427,089).

Claims 2 and 4 depend from amended claim 1, which the Applicant has shown above to be patentable.

Claims 8 and 10 also depend from amended claim 1. In addition, the Examiner's rejection of claims 8 and 10 is respectfully traversed. Murphy and Knowlton teach use of markers visible under imaging modalities, but both fail to teach the assymetric configuration. That assymetric configuration can be significant because it is enables to identify the *rotational orientation* of the inserted catheter. Nothing in Knowlton and Murphy teaches a marker which enables detection of the inserted catheter's rotational orientation, nor is such a need suggested. Detection of rotational orientation can be useful in application of the methods discussed with reference to Figure 2B of the instant application, when used in conjunction with the plurality of sensors mounted in concentric configuration, as disussed above.

***Claim Rejections – 35 USC § 103 -- Holmes***

The Examiner has rejected claim 12 as being unpatentable over Murphy (5,902,308) and further in view of Holmes et al (4,73,990). Claim 12 depends from amended claim 1, which the Applicant believes he has shown to be patentable.

***Claim Rejections – 35 USC § 103 -- Shah***

The Examiner has rejected claims 13-14, 19-23, 15-17, 34-36, 38, and 40 as being unpatentable over Murphy (5,902,308) and further in view of Shah (6,081,737).

Independent claims 13 and 19 have been amended in a manner corresponding to that of claim 1 (and claim 34 canceled), to indicate that the gauges are provided at different circumferential positions. As noted above, this is not shown in Murphy. Thus, there is no prima facie case.

Applicant respectfully submits that once such gauges are not shown in Murphy, processing them in accordance with Shah is not possible and therefore the combination is inoperable and incorrect.

Applicant also notes the type of sensor used in Shah (while possibly interpretable as being at multiple circumferential positions) is not suitable nor a replacement for that used in Murphy, and, in general the use of a balloon as in Murphy would preclude the uses of Shah, such as dragging the device along a lumen.

In addition, applicant notes that Shah, while describing multiple contacts on a balloon, always treats the signal as an aggregate, see for example, Col. 7, lines 13-25. With respect to Claim 13, Shah does not use the decision function shown in limitation “d”.

The dependent claims are patentable at least for reason of being dependent on a patentable base claim.

***Further Claim Rejections – 35 USC § 103***

The Examiner has rejected claims 18, 24-30, 31, 33, 37, 39, 41 as being unpatentable over Murphy (5,902,308) and further in view of one or more of Shah (6,081,737), Strommer (2004/0138548), Knolwton (6,427,089) and Holmes (4,873,990) (different combinations for different claims).

All these claims are dependent claims which are patentable at least for reason of being dependent on a patentable base claim, as argued above.

All rejections have been responded to. Early allowance of the pending claims of the present application is earnestly solicited.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Martin D. Moynihan", written in a cursive style.

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**Enclosures:**

- Petition for Extension (3 Months)